SOCIAL IMPACT OF DISEASE IN THE LATE NINETEENTH CENTURY

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THE late 19th century witnessed the bacteriological revolution, without doubt one of the most significant events in the history of medicine. Prior to this, epidemic and endemic dieases were as inextricable and mysterious to man as they had been to his most primitive forebears. A few empirical discoveries, such as vaccination for smallpox, had led to some improvement in conditions of health, but the origin and transmission of diseases were as obscure as ever. Acrimonious debates characterized medical meetings as late as the 1880's as theory vied with theory, and theorist with theorist. The greatest advance in knowledge of infectious diseases until then had come from the general recognition that such diseases flourished in filthy, overcrowded conditions. This development, for which the medical profession deserves only partial credit, resulted in the movement for sanitation, which began reducing the urban death rate well before bacteriology provided health officials with a sound rationale.

Although the movement for public and personal hygiene was firmly established in the second half of the 19th century, and Pasteur, Koch, and their colleagues were unveiling the tangled skein of bacteriology, communicable diseases still remained the leading health problem. The health records of every city show that tuberculosis, diphtheria, scarlet fever, whooping cough, enteric disorders, measles, smallpox, and even malaria were endemic. Infant mortality—largely attributed to such vague causes as summer fever and diarrhea, teething, colic, and convulsions —was a major component of the high total death rate. The loss of so many children, however, was accepted as the inexorable working of fate.

Smallpox, the one disease for which a fairly effective preventive measure was available, should have created no difficulty, yet it continued to flare up in every American city. A series of outbreaks in New York City during the 1870's caused 805 deaths in 1871, 929 in 1872,

484 in 1874, and 1,280 in 1875.[1] During three of these same years the annual death toll from smallpox in New Orleans was more than 500, and Dr. Joseph Jones, president of the Louisiana State Board of Health, later declared that 6,432 residents of New Orleans had died of smallpox in the years from 1863 to 1883. As late as the winter of 1899-1900, three of 12 medical students at Tulane University, infected during a widespread outbreak, died of the disease.[2]

Compared with other communicable infections such as diphtheria, for which little could be done, smallpox was only a minor cause of death. Diphtheria, a fearful disorder with an equally high fatality rate, was a major epidemic disease throughout most of this period. Earlier, during the 1850's and 1860's, it had been merely one of many children's complaints, but its incidence took a startling upturn in the 1870's. From 1866 to 1872 diphtheria deaths in New York averaged about 325 per year. In 1873 the figure jumped to 1,151, increased to more than 1,600 in 1874, and then reached a new high of 2,329 in 1875. From 1800 to 1896 the annual deaths from diphtheria never fell below 1,000; on three occasions the total was well in excess of 2,000. The peak period for diphtheria in New York City came during the 1890's, the years when throat cultures and antitoxin therapy were introduced. New York's problems with diphtheria were in no sense unique.[3] In New Orleans a health official informed a joint meeting of the city's two medical societies in 1887 that diphtheria had long existed there, but never before had it been "so widespread and abundant as now."[4] By this date diphtheria had spread throughout America, ravaging town and country alike. Since many deaths from diphtheria went unrecorded, and the hundreds of infant deaths attributed to croup and other vague causes undoubtedly included some cases of diphtheria, the actual toll was probably larger than the statistics of mortality show.

The most surprising aspect of diphtheria was that it aroused so little concern. One of the few newspaper editorials about it came after an 1873-1874 epidemic which killed 1,344 people in New York City. On this occasion the editor of the *New York Times* declared: "Had a tithe of the number died from anything resembling cholera or yellow fever we should have had a public scare which would have compelled such a cleaning out of tenements, flushing of sewers, and clearing away of street filth as had not been witnessed for many years."[5] Occasional discussions can be found in medical journals and transactions of societies

but these centered chiefly around methods of treatment. The casual public reaction to diphtheria contrasts sharply with the attitude of colonists a century or so earlier. When a virulent form of the disease suddenly burst upon Western Europe and the American colonies in the 1730's, it aroused widespread apprehension. By the 1870's, however, diphtheria was a familiar disorder to which the population had become accustomed, and its annual toll among the young had come to be taken as a matter of course. The doctors could do little about it, and the public attitude was one of resignation.

This same fatalistic attitude also characterized the public reaction to scarlet fever, tuberculosis, typhoid, and the other perennial disorders. Dr. Abraham Jacobi, reporting for the Committee on Hygiene of the New York County Medical Society, pointed out that between 1866 and 1890 about 43,000 residents of New York had died of diphtheria and croup and that more than 18,000 had succumbed to scarlet fever. Despite this enormous mortality, the city had made virtually no public provision for the sick. Nine years before, in 1882, he continued, the municipal hospital facilities were so crowded with cases of smallpox, typhus, and typhoid that there had been no room for patients with diphtheria or scarlet fever. Since that time nothing had been done except to open one hospital with 70 beds. Almost in despair, Dr. Jacobi exclaimed: "Seventy beds, and twenty-five hundred cases are permitted to die annually." [6] Dr. Jacobi's statement takes on added significance when one considers that New York City had one of the best health departments in the United States.

In terms of mortality, two diseases, phthisis or consumption (tuberculosis of the lungs), and pneumonia should have caused the greatest outcry. Both, however, were considered "constitutional" diseases, and their very frequence dispelled the fears one might expect to be associated with them. In 1870 tuberculosis of the lungs was responsible for about 4,000 deaths in New York City; this figure rose steadily in the ensuing years until about 1890, when almost 5,500 deaths were reported. Deaths from pneumonia rose even more sharply—from 1,836 in 1870 to 6,487 in 1893. Despite their enormous death toll, these familiar and chronic complaints lacked the drama of the great pestilences, and they went largely unnoticed by the general public.[7]

Although most of these statistics have been drawn from New York and New Orleans, the conditions that they reflect prevailed in all major

American cities. New Orleans and other southern urban areas differed from the North only with respect to malaria and yellow fever. As in the North, tuberculosis and the respiratory diseases were the number one killers, while diphtheria, scarlet fever, smallpox, measles, and other disorders contributed to the general mortality.

Although gradually receding southward, malaria was a major problem in the United States throughout the 19th century. In New York City 457 deaths were attributed to malaria during 1881, and it was 1895 before the city's annual number of deaths from the disease fell below 100.[8] In terms of total mortality, malaria was of little significance to New York and most northern cities, but it was a major factor in the South. In 1888 Dr. Stanford Chaillé surveyed the causes of death in New Orleans and concluded that tuberculosis, malaria, and dysentery were the chief culprits. Bearing out Dr. Chaillé's statement, the records of the New Orleans Charity Hospital for 1883 show that 45% of the 8,000 patients admitted were treated for malaria. But malaria, too, was an old and familiar complaint, and in those areas where it was endemic its recurrence each spring and fall was accepted almost as inevitable as the seasonal cycle itself.[9]

In sharp contrast to this casual acceptance of the diseases mentioned thus far was the public reaction to Asiatic cholera and yellow fever. Although both disorders had reached their peak in the 1850's and henceforth were only a minor cause of morbidity and mortality, they dominated newspaper stories relating to health, preoccupied a good share of the time of the medical profession, and were important factors in promoting public health measures. Had either disease gained a permanent foothold in the United States, it might well have been among the ranking causes of mortality and morbidity, but at the same time it would have become familiar and in the process would have lost its capacity to inspire terror. As it was, outbreaks of cholera in any part of the world or the appearance of a case of cholera or yellow fever in quarantine was enough to arouse the newspapers, medical societies, and civic authorities in every American port.

Of the two diseases, yellow fever had a much longer history in the United States. It first appeared in the late 17th century in Boston and then plagued every American port from Boston southward until the beginning of the 19th century. After a series of major epidemics from 1793 to 1805, the Northeastern section of the United States was virtually

free of the disease. Attacks on the South Atlantic and Gulf Coast areas, however, intensified in the first half of the 19th century and reached their peak in the 1850's. The number and intensity of the outbreaks, with one or two exceptions, tapered off sharply after the Civil War, although the disease continued to be a real threat to every southern port.[10]

Yellow fever is a fatal and frightening disease; its attacks on the cities of the Eastern seaboard from 1793 to 1805 left a vivid imprint upon the public mind. Throughout the remainder of the century, memories of this pestilence were constantly revived by grim accounts of the recurrent outbreaks in southern ports. Moreover the disease was endemic in the West Indies, and it was a rare summer when one or more cases were not discovered by northern quarantine officials. In 1856 lax enforcement of quarantine laws resulted in more than 500 cases of yellow fever on Staten Island and the western end of Long Island. The New York City quarantine station was located on Staten Island at this time, and outraged local residents barricaded all entrances to it. When the New York authorities responded in 1857 by buying a new site several miles away, an armed mob vandalized the buildings. The following summer, when additional yellow fever patients were landed, another mob burned the quarantine hospital to the ground. Determined opposition by local citizens at all proposed new sites forced the quarantine officials to buy an old steamer to use as a floating hospital for yellow fever.[11] Although the fever never gained a foothold in Manhattan, every summer New York newspapers carried stories of its ravages in the South, and they rarely failed to editorialize upon its danger whenever cases were reported on incoming vessels.

In southern ports it was not necessary to revive old memories, since most residents had experienced close contact with the disease. In 1866-1867 the fever struck coastal towns from Wilmington and New Bern in North Carolina all the way to Brownsville, Texas. Desultory attacks continued until 1878, when the disease was once again widespread. On this occasion it traveled up the Mississippi Valley as far as St. Louis, Chattanooga, and Louisville. Aside from a major outbreak in Florida during 1888, only scattered cases were reported until 1897-1899 and 1905, when minor epidemics occurred in New Orleans and the surrounding areas. The 1878 outbreak, by far the most severe in the postwar years, resulted in 27,000 cases and over 4,000 deaths in New Orleans

and wiped out almost 10% of the populations of Memphis and Vicksburg.[12]

Considering these statistics, it is not to be wondered that rumors of yellow jack or the "saffron scourge," as it was sometimes called in New Orleans, was enough to cause panic. When a reported outbreak of yellow fever in Ocean Springs, Miss., in 1897 led the New Orleans Board of Health to proclaim a quarantine against all Gulf Coast towns, a panic-stricken mob of New Orleans residents vacationing in one of the resorts seized control of a train and brought it to the Louisiana state line. Here the train was held up until the health officials, recognizing the hungry and desperate condition of the passengers, reluctantly permitted them to enter New Orleans. This act of mercy by the Board of Health was assailed bitterly and was a factor in the subsequent resignation of the entire board.[13]

When the disease appeared in New Orleans, the mayor arranged for one of the schools to be used as a temporary yellow fever hospital. The following night an armed mob, objecting to the presence of a hospital in their neighborhood, set fire to the building. When firemen arrived, onlookers cut the hoses, precipitating a fight between the mob and the firemen and policemen. Even as late as 1905 the reaction to the presence of yellow fever was one of profound shock. The president of the local medical society in New Orleans wrote: "When the first knowledge reached our city of the presence of this dread disease in our midst, there was almost a panic—stocks and bonds went begging, a pall seemed to be thrown on all things, a general exodus of those who could afford it took place, and the commercial interests seem paralyzed."[14]

Asiatic cholera, the most feared of all diseases in the 19th century, arrived in the Western World as a by-product of the Industrial Revolution. Because of its short incubation period and rapid course, the disease was restricted to the Far East almost until the advent of steam power and rapid transportation. At the same time, industrialism brought massive urbanization with all its concomitant problems: crowded slums, limited and contaminated water supplies, hopelessly ineffectual methods for eliminating sewage and garbage, and city governments ill-equipped to deal with the explosive growth of population. Thus the Industrial Revolution provided both the rapid transportation necessary for spreading the disease and seed beds where it could flourish in the crowded cities.

Improvements in communication contributed further to enhancing the role played by cholera, for no disease in American history was so widely heralded at its first appearance (1832). The introduction of cheap newspapers and journals had made it possible for the American public to follow the disastrous course of this pestilence as it advanced through Russia, Eastern Europe, and pushed northwestward to the Atlantic. The accounts of its destructive progress built up growing apprehensions which were intensified by urgent warnings from health authorities and medical societies that the filthy state of American communities had already set the stage for explosive outbursts of disease. Cholera struck the United States first in 1832 and returned in 1848-1849. On both occasions it swept through cities and towns within a few weeks, killing thousands. In 1866 and 1873 the disease again threatened, but prompt sanitary measures limited its effect. Without knowing precisely why, health authorities recognized that the infection was spread through the feces of infected persons, and they resorted successfully to disinfecting procedures.[15]

Unlike yellow fever, which periodically demonstrated the reality of its threat, Asiatic cholera was never more than a potential danger in the years which followed the Civil War, yet it received an inordinate amount of attention from newspapers and journals in all sections of the United States. Most of the civic cleanups and sanitary campaigns were sparked by what was considered to be the imminent danger from this disease. It shared with yellow fever the capacity for creating panic and brutalizing decent citizens. Victims of Asiatic cholera were often dumped ashore by crews and passengers of river boats, much to the dismay of local residents, who occasionally left them there to die. When the disease appeared in Pittsburgh in 1849 and the Sisters of Mercy opened their hospital to its victims, meetings were held by indignant neighborhood residents and local newspaper correspondents attacked the sisters bitterly. In nearby Allegeny the same situation held true for the Reverend Passavant when he, too, offered help to cholera patients.[16]

The reaction of Americans to a threatened cholera outbreak in 1873 shows how the apprehensions aroused by earlier epidemics carried over into the postwar years. As the disease began spreading into Europe, the newspapers were filled with cholera stories, and the *New York Times* editorialized on "cholera panics." The editor of a medical

journal declared that in the United States cholera was the "all-absorbing topic." Responding to demands from newspapers and medical societies, the New York City Health Department promptly began a major effort to alleviate the worst sanitary conditions within the city.[17]

A few years later, when cholera broke out in Toulon and Marseilles, American newspapers once again carried daily front-page reports of the disease. In July 1884 President Chester Arthur reflected national concern by issuing a proclamation warning state officials to be on guard. Throughout the following winter cholera continued to preoccupy public attention. In January a group of New York businessmen organized the Sanitary Protective Society to mobilize all existing health agencies within the city. As the public clamor for action increased, the city board of health secured a special appropriation of $50,000. When the expected epidemic did not materialize, the board was given permission to retain the fund for future use. The following year Asiatic cholera was reported in Italy, and President S. Grover Cleveland was requested to prohibit all Italian immigration until the danger was over.[18]

The last major cholera scare came in 1892. Once again a state of alarm characterized the entire American seaboard. Daily front page stories reported enormous casualties in Russia and hinted of comparable figures in western European cities. Municipal authorities, collaborating with health officials, initiated massive sanitary campaigns, checked on food and water supplies, and made preparations for the expected assault. In New York the city health department retained its summer corps of 50 physicians on an emergency basis; the St. John's Guild lent its "floating hospital" for the use of cholera cases; J. P. Morgan offered the use of a steamship to house cabin passengers from immigrant vessels during the quarantine period; and the directors of St. Mark's Hospital organized a volunteer medical and nursing corps. On the national scene President Benjamin Harrison responded to the crisis by ordering all immigrant vessels to perform a minimum 20-day quarantine. To facilitate the procedure of quarantine, the state of New York leased buildings on Fire Island for the use of healthy cabin passengers during the quarantine period. On hearing this news, the local board of health promptly deputized all citizens and prepared to resist. An armed mob lined the pier, and it was not until the governor mobilized the National Guard that the mob dispersed

and passengers were able to land without being molested.[19]

Since most societies tend to operate on a crisis basis, the diseases which were most effective in precipitating social change were those with the greatest shock value. In this category it is clear that Asiatic cholera and yellow fever stood by themselves, with smallpox a poor third, and the other disorders ranking well behind. The outbreaks of yellow fever which struck the Eastern seaboard from 1793 to 1795 had the immediate effect of bringing into existence temporary boards of health, which had surprisingly wide powers. In New York City, for example, the board of health was given the authority and funds to evacuate large sections of the city and to provide food, housing, and medical care for the poor. A permanent result of these outbreaks was the creation of the office of city inspector, a forerunner of New York's health department. Throughout the century yellow fever scares continued to give impetus to health reform. The outbreaks in the 1850's in New Orleans and the southern states had repercussions in every Eastern port and greatly strengthened the position of reformers fighting for permanent boards of health.

In the Southern states, which bore the brunt of the attacks in the 19th century, yellow fever provided the chief stimulus to health reform. Two major epidemics in Louisiana in 1853 and 1854, the first of which killed almost 9,000 residents of New Orleans and the second another 2,500, were directly responsible for the creation of the Louisiana State Board of Health, the first such agency in the United States.[20] Successive epidemics strengthened this board until 1897, when the consternation aroused by the reappearance of yellow fever after an absence of several years forced the members of the board to resign and led to a reorganization of the state board and the establishment of a separate board of health for New Orleans. In 1878 the disastrous outbreak, which affected almost every major town on the South Atlantic and Gulf coasts and spread far up the Mississippi Valley, aroused the entire nation. In Memphis, a city which had not recovered from the Civil War, the loss of 3,500 residents to yellow fever brought a major social and political upheaval.[21] On the national scene, Congress reacted by passing the first national quarantine act. As the full impact of the 1878 epidemic was felt, health reformers were able to secure from Congress a second measure creating the National Board of Health. Neither of these laws proved effective; the quarantine law was weak,

and the National Board of Health, after a stormy existence virtually disappeared in 1883 when Congress eliminated its appropriation. Nonetheless, during its brief lifetime the National Board of Health did help to arouse a public health consciousness, and it paved the way for the creation of the United States Public Health Service a few years later.

Asiatic cholera, because it constituted a threat to all areas, was possibly even more significant than yellow fever. The first two waves of this disorder, 1832-1835 and 1848-1855, struck at the coastal cities and then followed the unexcelled waterways of North America. In their wake they left not only a trail of death and suffering but also a host of temporary health boards. During the first attack on Pittsburgh, for example, a 10-man sanitary board was appointed and given an appropriation of $10,000. The following year the funds were reduced to $6,000 and, as the threat of cholera receded, the board disappeared and the funds for sanitation were virtually eliminated from the municipal budget.[22] The second wave of Asiatic cholera at the mid-century coincided with the emerging sanitary movement and the peak years of yellow fever. The two diseases were largely responsible for the organization of the National Sanitary Conventions which met from 1856 to 1860. These gatherings of state and municipal health officials and representatives of medical societies were the first attempts to devise national quarantine and public health programs, and they helped lay the basis for the subsequent establishment of the American Public Health Association.

The second and third waves of Asiatic cholera played a significant role in the establishment of the Health Department of New York City. More than 5,000 New Yorkers died of cholera during 1849 and several hundred more died of it in 1854. Since sanitationists argued that cholera was the product of crowding, the filth and quarantine faction believed that it was a specific communicable disease which could be kept out of the city, cholera supplied both factions in the health movement with ammunition in their effort to obtain a permanent health agency for the city. In the years following the cholera outbreaks of 1849-1854, campaigns to educate the public gradually gained momentum. Several health bills for New York City were introduced into the state legislature during the early 1860's but they all failed. At this stage the third epidemic wave of Asiatic cholera

appeared, and its threat in the winter of 1865-1866 led to the passage of a Metropolitan Board of Health Act for New York City. The first problem confronting the Metropolitan Board was to deal with the imminent danger from cholera. An energetic sanitary campaign combined with rigid isolation, quarantine, and disinfection measures kept the number of cases to a minimum. This 1866 attack on the United States was relatively mild and probably would have had a minor effect on New York City. New Yorkers, remembering the 5,000 deaths a few years earlier, gave full credit to the Metropolitan Board of Health. This auspicious start left a residue of good will which resulted in strong public support for the health department for many years.[23]

Repeated cholera scares continued to remind New York officials and the general public of the need for a strong health department, but it was not until 1892 that the disorder again made a permanent impact on the city. The widespread alarm touched off by cholera in that year has already been mentioned. For several years prior to it Drs. Hermann M. Biggs and T. Mitchell Prudden had been advocating the establishment of a bacteriological laboratory. Capitalizing on the general apprehension, Dr. Biggs won his point with the city Board of Estimate and, in September 1892, New York City established the first laboratory to be used for the routine diagnosis of disease.

Possibly more important than the direct effect of epidemic diseases upon social and political reform was their indirect impact. The middle and upper classes sought to insulate themselves from the deplorable condition of the working class, but for those members who encountered the appalling infant mortality and the ravages of disease among the lower economic groups the experience was often traumatic. Morever, as conditions in the urban slums worsened, the diseases of the poor could not be contained, and public health became a matter of concern for all the people.

Members of the medical profession were among the first to encounter the disease and misery of the poor. It was recognized that clinics and dispensaries catering to the poor were essential to medical training and research, and young physicians and surgeons were thrown into direct contact with the realities of poverty. Not surprisingly, in America physicians were among the leading advocates of public health. More significantly, since the integral relation between poverty

and disease was all too obvious, they were also among the leaders of social reform.

During the terrible epidemics of Asiatic cholera and yellow fever volunteer groups of all sorts came in contact with dire poverty, and many individuals seeking to help the deserving poor gradually came to realize that even the undeserving poor were the product of their brutalizing environment. In the South a notable example of the volunteer groups was the Howard Association, named after John Howard, the famous English reformer. Originating in New Orleans during a yellow fever epidemic in 1837, its program gradually spread to other southern cities and towns. The members were young businessmen who volunteered their services during major epidemics. The Howards, as they were called, organized massive relief programs to provide medical care for the sick poor and housing and food for their families. The willingness of these men to volunteer for work with the Howard Association evidences some degree of social conscience, but their intimate contact with poverty created a new awareness of social needs.

As far back as the 16th century it had been argued that a country's population was a major form of wealth. By the mid-19th century demography was emerging as a science, and improvements in the collection of vital statistics began to reveal the high morbidity and mortality rates in urban areas. One of the major arguments used by health and social reformers was the economic cost of sickness and death. Estimating the productivity per adult worker, they calculated the loss of productivity caused by the many deaths and added to it the cost of medical care for the sick. The validity of this argument was demonstrated clearly by the repeated epidemics of yellow fever which effectively closed down southern cities and brought all economic activities to a halt. Throughout the 19th century most physicians and laymen believed that epidemic diseases were either propagated or nurtured in conditions of dirt and overcrowding. This environmental concept led to an assault on the atrocious tenement conditions, nuisance trades, deplorable working conditions, and other abuses.

Late in the century the bacteriological revolution turned the medical profession away from environmentalism and focussed its attention upon pathogenic organisms. The germ theory had the beneficent effect of awakening the upper classes to the realization that bacteria were no respecters of economic or social position and that a man's health was

dependent to some extent on the health of his fellowmen. The knowledge that the diseases of the workers who sewed clothes in their filthy tenement homes or who processed food could be spread to decent, clean, and respectable citizens served as a powerful incentive to the reform of public health. Since public health could not be separated from social conditions, the net result was an attack on poverty.

The best evidence that a concern for public health underlay much of the effort for social reform is to be found in the multiplicity of volunteer sanitary associations which sprang up in the late 19th century. In every city private groups worked to establish or improve water and sewerage systems, to clean streets, to provide pure milk for the infant poor, to remedy abuses in municipal hospitals and other institutions, and to establish dispensaries, clinics, and hospitals. Examples of these groups in New York City were the Association for Improving the Condition of the Poor, the New York Sanitary Reform Society, the Ladies Health Protective Association, the St. John's Guild, the Sanitary Protective League, the Sanitary Aid Society, and the New York Society for the Prevention of Contagious Diseases. Of the many voluntary organizations operating in New York during this period, some sought only one immediate objective and disbanded after a brief existence, others created organizations that survived for many years. What they all shared in common was the belief that a healthy population was basic to a sound society.

In glancing back over the 19th century one can safely conclude that the rapid expansion of urban areas provided fertile grounds for communicable diseases, and that these diseases were both a cause and effect of the desperate poverty which characterized so many of the cities. At the same time the frightening sickness and death rates drew attention to the deplorable condition of the poor. Dramatic outbreaks of yellow fever and cholera profoundly stirred public opinion and directly and indirectly contributed to the growth of public health institutions. Meanwhile statistical evidence was developing which showed an even heavier toll from chronic and endemic disorders. The net effect, as shown by even the most cursory reading of late 19th century newspapers, was that public health and sanitary reform became major public issues. And for nearly all social reformers, whether their concern was with infant welfare, tenement conditions, or even political reform, the elimination of sickness and disease became a major aim.

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